

## REMARKS

The present invention relates to water soluble or dispersible porous bodies and to methods of producing such porous bodies. The porous bodies of the present invention facilitate dispersion and, in many cases, enable hydrophobic materials to be dispersed more effectively than previously.

The claims have been amended as follows:

### Claim 1

- by inserting a hyphen between the words "water" and "soluble" and between the words "emulsion" and "templated", and by inserting a comma after "three dimensional" and after "emulsion-templated" so that the claim reads better;
- by stating that "substantially all of the water and oil have been removed" from the water-soluble porous bodies of the invention (basis can be found on page 3, lines 17-18, and page 17, lines 18-19 of the Specification);
- by deletion of "and" from the and of part (a);
- by stating that the water-soluble polymeric material of part (a) "forms a homogeneous solution in water" as a definition of "water-soluble" (basis can be found on page 14, lines 10-12);
- by stating that the water-soluble porous bodies of the invention "comprise two types of pores: one from the sublimation of solid ice and one from the sublimation of the oil phase" (basis can be found on page 22, lines 12-15); and
- by explicitly stating that the water-soluble polymeric material is a "water-soluble" natural gum, a "water-soluble" polysaccharide, a "water-soluble" cellulose

derivative or a "water-soluble" homopolymer or copolymer comprising certain (co)monomers.

#### Claim 4

- by explicitly stating that the cellulose derivative is "water-soluble".

#### Claim 11

- by inserting a hyphen between the words "water" and "soluble" and between the words "emulsion" and "templated", and by inserting a comma after "three dimensional" and after "emulsion-templated" so that the claim reads better;
- by deletion of "and" from the and of part (a);
- by stating that the water-soluble polymeric material of part (a) "forms a homogeneous solution in water" as a definition of "water-soluble" (basis can be found on page 14, lines 10-12);
- by stating that steps (a) to (d) are "successive" steps;
- by inserting "water-soluble" before "polymeric material", replacing "hydrophobic" with "water-insoluble" and by inserting "aqueous" between "continuous" and "phase" in step (a);
- by stating that "substantially all of" the liquid medium is removed by sublimation in step (d); and
- by stating that the water-soluble porous bodies of the invention "comprise two

types of pores: one from the sublimation of solid ice and one from the sublimation of the oil phase" in step (d) (basis can be found on page 22, lines 12-15).

- by incorporating the subject matter of claim 18, which has not been separately rejected over Pruss alone (only in combination with Wu et al. and Steiner et al.; Claim 18 has been canceled, without prejudice.

#### Claim 13

- by explicitly stating that the polymeric material is "water-soluble" and referring to a "water-soluble" natural gum, a "water-soluble" polysaccharide, a "water-soluble" cellulose derivative or a "water-soluble" homopolymer or copolymer comprising certain (co)monomers.

#### Claim 21

- by inserting a hyphen between "water" and "soluble"; and
- by stating that the porous bodies of claim 1 are "water-soluble".

Care has been taken not to introduce any new matter.

**Claims 1, 4-8, 10-11 and 13-21 Are Not Obvious under 35 USC § 103**

Claims 1, 4-8, 10-11 and 13-21 were again rejected as obvious over Wu, et al. (US5025004), as evidenced by Steiner, et al. (US4888420), and Pruss, et al. (US2003/0215502). Also, Claims 1, 4-8 and 10-17 were rejected as obvious over Pruss, et al. The reasons for rejection appear to be effectively identical to the reasons provided in respect of the same claims in the previous Office Action.

Applicants respectfully traverse for the comprehensive reasons stated in the previous Amendment, as well as additional remarks and supporting information hereinbelow. For example, it has been acknowledged that Wu, et al., fail to disclose that the polymeric compositions have an intrusion volume as measure by mercury porosimetry of at least about 3 mL/g; and that Wu, et al., do not disclose that the powdered polymeric materials are porous; and that Wu, et al., do not disclose the steps of freeze-drying the porous materials. Turning now to each of the specific points raised by the Examiner in the "Response to Arguments" section of the Action, Applicants comment follows.

***What is the correct percentage range to refer to in Wu et al.?*** (see paragraphs 26-27 of the Action)

The Office Action position is that, because the product claims currently on file do not specifically exclude solvents, it is fair and proper to refer to the "method" percentages quoted in Wu *et al.* rather than the "powder" percentages. Applicants fundamentally disagree, because it simply does not allow for a comparison of like with like. However, to clarify the position that only the "powder" percentages in Wu *et al.* should be referred to, product claim 1 has been amended to state that the water-soluble porous bodies of the invention have had substantially all of the water and oil (the only solvents present) removed. Thus amended claim 1 is distinguished from Wu *et al.*

***Is cellulose acetate water-soluble or water-insoluble*** (see paragraphs 28-30 of the Action)

Applicants have previously explained that cellulose acetate phthalate is listed at column 6, line 7 of Wu *et al.* as an example of a water-insoluble polymer.

In further illustration of this difference between the present invention and Wu *et al.*, alone or in combination with the secondary references, Applicants submit herewith a Rule 132 Declaration of a University of Liverpool Chemistry Professor.

***What is meant by “emulsion-templating” and how does this differ from merely evaporating a solvent from a solution?*** (see paragraphs 31-32 and 34-36 of the Action)

Applicants have previously explained that Wu *et al.* do not comprise water-soluble porous bodies comprising a three-dimensional oil and water emulsion templated open-cell lattice. In the process of Wu *et al.*, an aqueous colloidal dispersion of a water-insoluble polymer is formed, which dispersion is dried, for example by spray-drying or freeze-drying. The aqueous colloidal dispersion of the water-insoluble polymer is a latex (i.e. a stable dispersion/emulsion of polymer microparticles in an aqueous medium) and when the latex is dried a powder is produced. This powder is not the same as the porous bodies defined in claim 1 of the present application where the pores are derived from the oil phase of the emulsion.

In further illustration of this difference between the present invention and Wu *et al.*, alone or in combination with the secondary references, Applicants submit herewith a Rule 132 Declaration of a University of Liverpool Chemistry Professor.

***Should there be a lower limit on the range of water-soluble polymer that is stated in the claims?*** (see paragraph 33 of the Action)

No, there should not be a lower limit – it is within the scope of the invention that there could be 0 % water-soluble polymer in the water-soluble porous bodies thereof. In such a case, the water-soluble structure (to be dissolved when the porous bodies are added to water, and to thereby release the water-insoluble material incorporated therein) is solely surfactant – see page 2, lines 12-15 of the PCT specification which states that “we have now determined that effectively polymer-free systems, i.e. which comprise a surfactant but *little* or *no* polymer can provide highly porous bodies which disperse rapidly on contact with water, even at low temperatures”.

In summary, presently amended claims 1 and 11, and their dependent claims, are inventive over Wu *et al.* (as evidence by Steiner *et al.*) and Pruss *et al.* because there is no disclosure in Wu *et al.* of porous bodies containing **less than 10 %** by weight of a water-soluble polymer other than a surfactant and of the body having an intrusion volume of at least about 3ml/g, or of said porous bodies having been made by an emulsion-templating (via freeze-drying) process. Similarly, there is no disclosure in Pruss *et al.* of a (porous) body containing 5-95 % by weight of a surfactant, or of said porous bodies having been made by an emulsion-templating (via freeze-drying) process. Although a wetting agent is mentioned, no percentage weight is given.

In view of the disclosures in each of Wu *et al.* and Pruss *et al.*, there would be no benefit to the skilled person in combining these documents, and certainly no teaching of or even towards the present invention. Modifying either of the teachings of Wu *et al.* or Pruss *et al.* with the other would not lead to the present invention because neither discloses or even suggests the use of an emulsion-templating method. Furthermore neither teaches porous bodies comprised of a water-soluble polymer and a surfactant in the weight percentages taught by claim 1.

### CONCLUSION

Reconsideration of the rejection is respectfully requested in view of the above remarks.

It is respectfully requested that the application be allowed to issue.

If a telephone conversation would be of assistance, Applicant's undersigned attorney invites the Examiner to telephone at the number provided.

Respectfully submitted,

/Ellen Plotkin/

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